

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1, 3, 4 and 7-13 remain in the application and are subject to examination.

No claims have been amended, added or canceled herein.

In "Claim Rejections – 35 USC § 103" in item 1 on pages 2-3 of the above-identified Office Action, claims 1 and 7-13 have been rejected as being obvious over U.S. Patent No. 6,620,359 to Meza et al. (hereinafter "Meza") in view of U.S. Patent No. 3,361,684 to Chvatal under 35 U.S.C. § 103(a).

In "Claim Rejections – 35 USC § 103" in item 2 on pages 3-5 of the Office Action, claims 1 and 7-12 have been rejected as being obvious over Bader (Thesis, Univ. Auckland, February 2002), (hereinafter "Bader"), in view of either German Patent Application DE 196 30 073 A1 to Eska et al. (hereinafter "Eska") or U.S. Patent No. 6,130,265 to Glueck et al. (hereinafter "Glueck") under 35 U.S.C. § 103(a).

In "Claim Rejections – 35 USC § 103" in item 3 on page 5 of the Office Action, claims 3-4 have been rejected as being obvious over Bader in view of Eska or Glueck and further in view of U.S. Publication No. 2002/0033247 to Neuschutz et al. (hereinafter "Neuschutz") under 35 U.S.C. § 103(a).

In "Claim Rejections – 35 USC § 103" in item 4 on pages 5-6 of the Office Action, claim 13 has been rejected as being obvious over Bader in view of either Eska or Glueck and further in view of Chvatal under 35 U.S.C. § 103(a).

In "Claim Rejections – 35 USC § 103" in item 5 on pages 6-7 of the Office Action, claims 1 and 7-11 have been rejected as being obvious over Xiao et al. (Energy Conversion and Management, January 2002, (43), Pages 103-108), (hereinafter "Xiao") in view of Eska under 35 U.S.C. § 103(a).

In "Claim Rejections – 35 USC § 103" in item 6 on pages 7-8 of the Office Action, claims 3-4 have been rejected as being obvious over Xiao in view of Eska and Neuschutz under 35 U.S.C. § 103(a).

In "Claim Rejections – 35 USC § 103" in item 7 on page 8 of the Office Action, claims 12-13 have been rejected as being obvious over Xiao in view of Eska and either U.S. Patent No. 5,882,570 to Hayward or Chvatal under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their previous form and, therefore, the claims have not been amended to overcome the references.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Claim 1 calls for, inter alia, a heat storage device, comprising:

a heat storage material mixture having an amount of a phase change material and an amount of particulate expanded graphite mixed with said phase change material,

wherein the expanded graphite is present in an amount of 5 to 40% by volume and is formed of particles comprising comminuted, compacted expanded graphite product with a bulk density of from 60 to 200 g/l and a mean particle diameter of 5 μ m to 5 mm.

Claim 8 calls for, inter alia, a method for producing a heat storage device, which comprises:

mixing an amount of expanded graphite and an amount of phase change material to produce the heat storage device according to claim 1, wherein the expanded graphite is present in an amount of 5 to 40% by volume and is formed of particles comprising comminuted, compacted expanded graphite product with a bulk density of from 60 to 200 g/l and a mean particle diameter of 5 μ m to 5 mm; and

shaping the mixture under pressure to form a shaped body.

Regarding item 1 of the Office Action, Meza does not teach that the expanded graphite which is present in a polymer is formed of particles, as claimed in the instant application. On the contrary, Meza teaches that a pellet is produced. A pellet, however, does not contain particles, but is instead a compact bulk material. After compaction, no separate particles are present, as is known by a person skilled in the art.

Furthermore, Meza does not describe comminuted, compacted expanded graphite as claimed in the instant application, but instead describes expanded graphite. The expanded graphite may be virgin expanded graphite or expanded graphite that results from recycled flexible graphite. Such flexible graphite originally was a compacted graphite, but after re-expansion cannot be identified as formerly having

been compacted graphite. The expanded graphite particles of formerly compacted graphite are definitely not "comminuted, compacted expanded graphite" as claimed in the instant application, but instead are expanded graphite.

For these two reasons, the subject matter of claims 1 and 8 and all of the claims dependent thereon are not obvious over Meza in view of Chvatal.

Regarding item 2 of the Office Action, neither Bader nor Eska nor Glueck teach the use of comminuted, compacted expanded graphite, as claimed in the instant application. Comminuted, compacted expanded graphite has very strong differences as compared to normal expanded graphite flakes as described e.g. by Bader. The advantage of the use of comminuted, compacted expanded graphite in the present invention is that due to their different properties, individual particles do not agglomerate as is the case for the particles taught in the prior art. The different properties relate, *inter alia*, to different surface properties. Expanded graphite particles, due to their high roughness, easily interact with each other. Comminuted particles of compacted expanded graphite, in contrast, have a smooth surface which does not easily interact. They are surprisingly very easy to mix into a PCM-material. The use of comminuted, compacted expanded graphite permits the recycling of residues of graphite foil, which is not disclosed by Bader. Due to these very strongly differing properties, a person skilled in the art would not come to the conclusion to employ comminuted, compacted expanded graphite instead of expanded graphite particles.

The densities cited by the Examiner do not relate to comminuted, compacted expanded graphite. Thus, a combination of Eska, Glueck or Tamme with Bader also does not lead to the subject matter of the present invention.

Regarding item 5 of the Office Action, Xiao also does not disclose comminuted, compacted expanded graphite. For the same reasons as discussed above regarding items 1 and 2 of the Office Action, the subject matter of the present invention is not made obvious by Xiao in view of Eska.

Clearly, none of the references show:

particles comprising comminuted, compacted expanded graphite,
as recited in claims 1 and 8 of the instant application.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the limitations of claims 1 and 8. Claims 1 and 8 are, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claims 1 or 8.

In view of the foregoing, reconsideration and allowance of claims 1, 3, 4 and 7-13, are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

Petition for extension is herewith made. The extension fee for response within a period of two months pursuant to Section 1.136(a) in the amount of \$490.00 in accordance with Section 1.17 is enclosed herewith.

Please charge any other fees that might be due with respect to Sections 1.16 and 1.17 to Deposit Account Number 12-1099 of Lerner Greenberg Sterner LLP.

Respectfully submitted,

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